

CLAIMS

1. Sealed capsule (1) basically consisting of a deformable membrane (2) sealed at its base by a piercable cap (3) so as to define a sealed volume (V) for containing at least one substance (S) between said deformable membrane (2) and said cap (3), said capsule (1) having at least one integrated breakage means (4) for said piercable cap (3) capable of tearing it to release an effective quantity of the substance(s) (S) following sufficient deformation of said deformable membrane (2) due to an external mechanical force applied thereto, characterised in that it comprises at least one intermediate part (6) provided between said deformable membrane (2) and said cap (3), said intermediate part (6) having said at least one breakage means (4) of said deformable membrane (2) that can be activated when there is sufficient deformation thereof and in that the intermediate part (6) is produced in the form of a peripheral ring (7) on which rests locally, by means of a hinge portion (9), an arched element (15) taking on substantially and at least locally the form of the deformable membrane (2) in its initial state and of which the free end (16) is produced in the form of at least one projecting or pointed element (12) directed towards the cap (3), a useful support surface (14) being provided on said arched element (15) that is capable of transmitting an external mechanical force applied on said deformable membrane (2) by the user that is sufficient to cause the end projecting element(s) (12) to tip in order to break the cap 3 releasing an effective quantity of the substance(s) (S).

2. Capsule according to claim 1, characterised in that the useful support surface (14) provided on the arched element (15) has on its internal face directed towards the cap (3), a vertical or substantially vertical wall portion (17) directed towards the cap (3) of which an additional support surface (14') assists transmission of the external mechanical force applied to said deformable membrane (2) by the user to break the cap (3).

3. Capsule according to claim 1 or 2, characterised in that the peripheral ring (7) and the hinge portion(s) (9) and/or the arched element (15) are produced in a single piece, preferably by injection-moulding of a synthetic material.

4. Capsule according to any one of the preceding claims, characterised in that the end of the breakage means (4) opposite the hinge (9) or the tie of said breakage means (4) on the intermediate part (6) may be equipped with a slender tie or bridge (10') performing

the function of a breakage bridge that secures said means (4) while the stopper is not effectively being used.

5. Capsule according to any one of the preceding claims, characterised in that the cap (3) is fixed directly on the deformable membrane (2), preferably in the region of their common circular periphery where said cap (3) and said deformable membrane (2) are in contact while straddling one another.

6. Capsule according to any one of the preceding claims, characterised in that the cap (3) is fixed directly on the lower face (6') of the intermediate part (6), in particular on the lower face (6') of the periphery of the ring (7) forming said intermediate part (6).

10 7. Capsule according to any one of claims 5 and 6, characterised in that the cap (3) is fixed by circular welding, circular thermal contact or by any similar process on the deformable membrane (2) or the lower face (6') of the intermediate part (6).

15 8. Capsule according to any one of the preceding claims, characterised in that the substance(s) (S) comprise(s) at least one substance which is sensitive to the contents of the receptacle (R) with which the capsule (1) is intended to collaborate and that must only be added thereto a very short time or just before its consumption.

9. Capsule according to any one of the preceding claims, characterised in that the substance(s) (S) comprise at least one medicament.

20 10. Capsule according to any one of the preceding claims, characterised in that the substance(s) (S) comprise at least one drinkable cosmetic agent.

11. Capsule according to any one of the preceding claims, characterised in that the substance(s) (S) are foods.

25 12. Capsule according to claim 11, characterised in that the substance(s) (S) are selected from the group made up of colorants, flavours, preservatives, sweeteners, thickeners, stabilisers, nutraceuticals, nutritional or dietetic supplements or any composition obtained from at least two of these ingredients.

13. Capsule according to any one of the preceding claims, characterised in that the substance or substances (S) comprise at least one solid substance, possibly reduced in the form or powder or granules.

30 14. Stopper for a receptacle with a neck or collar designed to dispense liquids or pastes, in particular for a mineral water bottle, characterised in that it basically consists of a base plate (18) for fixing on said receptacle (R) and closing said receptacle (R) by means of

a capsule (1) according to any one of claims 1 to 13 added in a sealed manner to said base plate (18), the deformable membrane (2) of said capsule (1) being itself covered by a rigid protective cover (19) resting on an annular base part (20) added to said base plate (18), the lower base of said capsule (1) being formed by the piercable cap (3), a useful sealed volume (V) filled with at least one substance (S) for adding to the contents of the receptacle (R) before consumption being thus defined between the deformable membrane (2) and said cap (3) of said capsule (1), an effective quantity of the substance(s) (S) being released into the contents of the receptacle (R) when the cap (3) breaks due to sufficient deformation of the deformable membrane (2).

10 15. Stopper according to claim 14, characterised in that the deformable membrane (2) and the protective cover (19) can both be produced from an elastically deformable material, substantially in the form of two hemispheres, the radius of the hemisphere of the protective cover (19) being slightly less than that of the hemisphere of the deformable membrane (2), said hemisphere of the protective cover (19) being provided with at least one 15 meridional indentation (19') extending from the base of said hemisphere over a part of the height thereof.

16. Stopper according to claim 14 or 15, characterised in that the base plate (18) is produced in the form of a part consisting of a cylindrical portion (21) designed to be fixed on the neck or collar (G) of the receptacle (R) equipped, in the region of its upper end, with 20 a flat annular portion (22) forming a circular internal shoulder (23) delimiting an opening (24) of said receptacle (R), the cap (3) resting or being fixed on the upper face (22') of said flat annular portion (22) turned towards the capsule (1).

25 17. Stopper according to claim 16, characterised in that the lower face (22'') of the flat annular portion (22) has a vertical indent (25) in the form of a ring-shaped skirt designed to collaborate with the internal face of the neck of the receptacle (R) and the cylindrical portion (21) in order to fix said stopper thereon.

18. Stopper according to any one of claims 16 or 17, characterised in that the upper 30 face (22') of the flat annular portion (22) is equipped with an annular rim (26) which is at least slightly deformable forming, after fitting the capsule (1) in said stopper, an annular throat (27) with said flat annular portion (22) trapping the peripheral part of the capsule (1), in the region of the cap (3) and the deformable membrane (2) and, if applicable, the intermediate part (6).

19. Stopper according to any one of claims 16 to 18, characterised in that the cylindrical portion (21) designed to be fixed on the neck or collar (G) of the receptacle (R) has on its circular external side wall means (28) designed to cooperate with additional means (29) situated on the base part (20) to fix the base part (20) on the base plate (18).

5 20. Stopper according to any one of claims 15 to 19, characterised in that the base part (20) comprises a cylindrical sleeve (30) designed to be fixed on the base plate (18) and equipped, in the region of its upper end, with a flat annular part (31) forming a circular internal rim (32) designed to come to rest, preferably compressing it, on the annular rim (26) which traps the peripheral part of the capsule (1), in the region of the cap (3) and the  
10 deformable membrane (2) and, if applicable, the intermediate part (6).

21. Stopper according to any one of claims 16 to 20, characterised in that the cylindrical part (21) is produced in the form of a cylindrical sleeve equipped with an internal thread (21') designed for screwing on the external thread of the threaded neck or collar (G) of the receptacle (R).

15 22. Stopper according to any one of claims 14 to 21, characterised in that the base part (20) has a first opening and closing means (33) designed to cooperate by engagement by elastic deformation with a second corresponding means (34) situated on the protective cover (19).

20 23. Stopper according to claim 22, characterised in that the base part (20) has a push button equipped with a first hook designed to cooperate with a second corresponding hook situated on the protective cover (19).

24. Stopper according to claim 22, characterised in that the base part (20) has a push button equipped with a recess designed to cooperate with a corresponding lug situated on the protective cover (19).

25 25. Stopper according to any one of claims 14 to 24, characterised in that the protective cover (19) is connected to the base part (20) by at least one cover hinge (35).

26. Stopper according to any one of claims 14 to 25, characterised in that the lower end of the base plate (18) at a distance from the outlet of the neck or collar (G) of the receptacle (R) is equipped with a security ring (36).

30 27. Stopper according to any one of claims 14 to 26, characterised in that it also comprises at least one anti-tamper device in the region of a means participating in the locking of the protective cover (19) in the closed position.

28. Stopper according to any one of claims 14 to 27, characterised in that the protective cover (19) and the deformable membrane (2) are produced from one or more translucent, preferably transparent, materials.

29. Stopper according to any one of claims 15 to 28, characterised in that the 5 circular internal shoulder (23) delimiting an opening (24) of said stoppered receptacle (R) is provided on part of its internal periphery with at least one tooth-shaped element (37), designed to facilitate breakage of the piercable cap (3) when the deformable membrane 2 of the capsule (1) is sufficiently deformed.

30. Receptacle with a neck or collar for distributing liquids or pastes, in particular 10 mineral water, characterised in that it comprises a capsule (1) according to any one of claims 1 to 13.

31. Receptacle according to claim 30, characterised in that said capsule (1) is fitted in a stopper according to any one of claims 14 to 29.